

In the first place, a material had to be provided which would admit of being engraved rapidly without burr or chipping, and would, without further preparation, serve as a mould for type metal. Secondly, drill pantographs had to be adapted to engrave the lines, and to be furnished with a gauge so as to vary their depth at pleasure.

The actual process is as follows :—The outline of the land is kept standing, and the composition is run in a mould bearing this outline on one face. The block, which is now an outline chart of the British Islands, is then placed under the pantograph drill, which reduces the original drawing, furnished from the Meteorological Office, to one-fourth. The barograms and wind-arrows are put on direct from the drawing, the figures and words by means of templates, in order to ensure uniformity in the type.

The instant the block is engraved it is ready to be stereotyped, and then it is a simple matter to adapt it in the usual manner to the cylinder of the machine.

The initiative in this new method of weather illustration is due to Mr. Francis Galton, and the practical details have been carried out by Messrs. Shanks and Johnson, of the Patent Type Founding Company.

It is hardly necessary to allude to the value of such charts as these as a means of leading the public to gain some idea of the laws which govern our weather changes. As soon as they appear in our afternoon papers, we may hope for a more intelligent comprehension of the difficulties which beset any attempt to foretell the weather of these islands for the space of even twenty-four hours.

We may safely say that with these charts we have not seen the end of weather illustration, which was set on foot more than four years ago by Sir W. Mitchell in the *Shipping Gazette*, and has been continued daily; but whatever improvements may hereafter be introduced in the process, it must be remembered that the credit of breaking the egg is due to the gentleman we have named.

THE ECLIPSE EXPEDITION

THE local arrangements for the Eclipse parties, to which we referred last week, have, we now know, been altered in the cases both of the Bay of Bengal and Siam parties.

With regard to the former, letters received from Galle, written shortly before the sailing of the *Enterprise* (which had arrived at that port from Calcutta with Capt. Waterhouse, Profs. Tacchini and Pedler, and three photographic assistants on board), state that it had been determined to give up Mergui, first because the accommodation there was doubtful, and secondly, because, in the opinion of those best informed, a cloudless sky at Camorta was almost a certainty. Hence there will be two strong parties on Camorta itself as widely separated as possible; and here, it will be remembered, the totality is longer than at any other station, being no less than 4m. 27s. at Kaikul.

The Indian Government had been careful to prepare huts for observatories on this island before even the *Enterprise* had left Calcutta; and as certain parts of it are known to be malarious, all the observers will sleep on board the steamer.

With regard to the Siam party, a Reuter's telegram, dated Singapore, April 8, shows that this party, instead of going direct to Chulai Point, has gone to Bangkok; and it would appear from the telegram that the observatories were being erected at some spot nearer Bangkok than the proposed station.

NOTES

It is with the greatest satisfaction we record that on Tuesday Mr. James Dewar, Demonstrator of Chemistry in the University of Edinburgh, was elected to the Cambridge Jacksonian Professor-

ship; all the other candidates having withdrawn. As our readers know, Mr. Dewar has already done excellent work, and is so widely known as a gifted investigator as well as a first-rate teacher, that his presence at Cambridge will be a great gain, not only to that University, but to English Science.

THE *Alert* and *Discovery*, the two ships destined for the Arctic Expedition, are to be commissioned to-day. In addition to the naturalists specially appointed, Captain Markham and several of the lieutenants and sub-lieutenants have been undergoing special instruction in the instruments they will have to use—astronomical instruments, pendulums, magnetometers, and spectroscopes.

AT Monday's sitting of the French Academy of Sciences, a letter was read from M. Puiseux, giving a *résumé* of his calculation for the solar parallax, founded on the recent Transit observations. M. Puiseux has made a comparison between the St. Paul Transit observations by Mouchez, and those of Pekin by Fleurbaey. The exact amount of the parallax is 8.879". Both observers had 6-inch refractors. The comparison of the results obtained by Fleurbaey and another observer at St. Paul with a 4-inch refractor gives 8.84". M. Puiseux, in computing the sources of error, states in his letter that the error cannot be more than $\frac{1}{100}$ of a second, by supposing the error to be two or three seconds of time for the moment of transit. M. Puiseux spoke briefly in support of the opinion expressed in his letter.

THE following from the *Kölnische Zeitung* of March 25, in reference to the recently invented "hardened glass," will be interesting :—According to the reports of Pliny, Petronius, and Dion Cassius, a man is said to have invented the making of flexible and malleable glass in the time of the Emperor Tiberius. The happy inventor—some call him a glass-maker, others an architect—brought to the Emperor a vase made from the new glass, with the hope of a rich reward. The Emperor, fearing that the new material might cause a decrease in the value of gold and silver, threw the vase to the ground in a passion. The vase, however, did not break, but was only bent like metal, and the inventor at once repaired the damage done with a little hammer; whereupon the Emperor had the poor fellow killed on the spot, so that he should not tell his dangerous secret to anyone. For years people have lost themselves in conjectures of what material this malleable glass might have been; some thought it was aluminium, others that it was melted chloride of silver; none, however, were certain. From various quarters the invention is now announced of a new glass which resists blows and the action of fire. Last autumn a company was formed at Bourg, in France, with a capital of 1,200,000 francs, for the working of an invention in this line, made by a M. de la Bastie. The German Glass-makers' Union communicated with this company with a view to purchase the invention, but this remained without further consequences, as the demands of the company were exorbitant. In the meantime it had been found that the elasticity was given to the glass by dipping the same, while it is heated to a half liquid state, into a hermetically closed bath of oil or fat, substances therefore which melt far below the boiling-point of water. In Silesia, where repeated experiments have tested the qualities of the De la Bastie glass, another new glass was invented a few days ago, by Herren Lubisch and Riederer, in Count Solm's glass-works, Andreashütte, at Klitschdorf, near Bunzlau. This glass, which the inventors call "metal glass," is so hard, that when a pane lies on the ground and a leaden ball of forty grammes weight falls upon it from an elevation of twelve feet, it receives not the slightest impression; nor is it in the least affected when dipped whilst red-hot into cold water. Window panes, lamp cylinders, and other articles of domestic use made from this metal glass, can therefore almost be denoted as unbreakable.

MR. H. C. SORBY, F.R.S., has sent us the following:—
 "In the early part of this year I was much interested in reading in the *Naturforscher* an account of a paper communicated to the Academia del nuovi Lincei, in Rome, by Count Castracane, on the discovery of Diatomaceæ in the ashes of English coals. Thinking it desirable that the attention of the members of the Royal Microscopical Society should be directed to this fact, I wrote to Count Castracane, requesting him to send to me some specimens. I have now received two mounted objects of the ashes of coal shipped from Liverpool, which will be exhibited at the *soirée* on Wednesday, April 21st. I trust that this will be the means of leading some of the Fellows to devote themselves to this kind of inquiry, since they will be able to see that the specimens contain not only several well-preserved species of Diatomaceæ, but also other curious bodies somewhat like, yet differing from, the *Xanthidea* found in flints."

M. WALLON, who is the Perpetual Secretary of the Academy of Inscriptions, as well as Minister for Public Instruction, resumed his academical functions last Thursday. He had to read over a number of letters written to him, the Perpetual Secretary, by himself, the Minister; and his colleagues were struck with the serious way in which he performed his duties as secretary. One of them, M. de Saulcy, having asked the Academy to send two learned men on a mission to some place, said to M. Wallon: "If M. le Secretary is good enough only to speak a few words to M. le Minister, I am perfectly certain the Minister will find no objection to my proposition."

M. PAUL PERNY, a former pro-Vicar Apostolic in China, has proposed to found a Europeo-Chinese Academy in the heart of China, to be composed of missionaries, for the purpose of discovering, translating, and circulating in Europe, Chinese works of every kind bearing on the sciences, arts, and industry. M. Perny states that the Emperor Kien-Lung, who lived upwards of a century ago, drew out the plan of a general encyclopædia of human knowledge, which has not a parallel in the world. The publication of this encyclopædia is still going on. Nearly 100,000 volumes have appeared; there remain 60,000 volumes to be published in order to complete the scheme of the Emperor. The Chinese have encyclopædias of more than 300 volumes on agriculture, horticulture, pisciculture, &c.

THERE is an increasing demand for land in Ceylon for the purpose of growing tea, cinnamon, cinchona, vanilla, and other useful plants for economical purposes, as well as for the spread of the coffee plantations. A disease in the coffee plant has lately been discovered which threatens scarcity of this product unless speedily checked. It is called "leaf disease," and, as its name implies, is principally apparent in the dearth of foliage, though the produce of the berries is also considerably reduced. It is believed by competent authorities to be mainly caused by exhaustion; and is, in this respect, similar to the disease among the lemon groves of Europe, to which we alluded a week or two ago. The Government of Ceylon have taken up the subject with a view to its thorough investigation.

THE Acclimatisation Gardens in the Bois de Boulogne, Paris, have received a rare collection of artificially coloured plants from China. The plants are exhibited in the great glass house of the gardens, and excite universal admiration. Among the collection is a dwarf-tree of half a metre in height, the trunk of which is as thick as a finger, and the root of which hardly fills the hollow of a man's hand; the specimen is about 100 years old, and is a species of oak. This, however, is not a natural phenomenon, but the result of Chinese horticulture, which finds its highest problem in the reduction of the natural size of plants.

WE draw the attention of friends of geography to the *Hydrographische Mittheilungen* (Berlin, E. S. Mittler), which form the

supplement to the publications of the Imperial German Admiralty *Nachrichten für den Seefahrer*; they have been published since 1873, and are most excellent in every way. The part for 1874, for instance, contains a detailed description of the Kerguelen Islands, a climatological picture of the Azores and Madeira, a treatise by Neumayer on the geographical problems in the Arctic regions, and a number of other interesting articles.

HEFT iv. of Petermann's *Mittheilungen* contains a letter from Dr. Oskar Lenz, dated Adolinalonga, on the Ogowe, which falls into Nazareth Bay, near Cape Lopez, just under the equator, giving a brief account of some short excursions he made last autumn in the district on the lower course of that river. The scenery, natives, fauna, and flora are characteristically Central African, and Dr. Lenz has been able to make considerable collections, including a large number of gorilla skulls. He seems to have been much hindered by sickness.

DR. GUSTAV LEIPOLDT, in a recently published work on the "Mean Height of Europe," after an elaborate calculation founded on a broad basis of measurement, concludes that it is 296'838 metres, 92 metres higher than the calculation of A. von Humboldt, who indeed made out the average altitude of all the land on the earth to be about 308 metres. The mean height of Switzerland; Leipoldt makes to be 1299'91 metres, while that of the Netherlands is only 9'61 metres. That of Great Britain is 217'70. Further interesting details will be found in the April number of Petermann's *Mittheilungen*.

THE same journal contains a map of Kerguelen Island, reduced from the English Admiralty Chart to a scale of 1—500,000. For comparison a map of Malta on the same scale is printed on the sheet, and gives one a very fair idea of the size of the southern island, which must be something like fifteen or twenty times the size of Malta. Accompanying the map are some remarks on the history and condition of the island.

IN the same number of Petermann's journal, Baron N. Schilling, of St. Petersburg, discusses the fertile subject of the theory of ocean currents.

AT the meeting of the Diplomatic Conference on the Metrical System, at Paris, on April 12, it was agreed to organise an International Bureau of Weights and Measures, the cost of maintaining which would be divided between the States represented at the Conference.

THE discovery of a boiling lake in the Island of Dominica is announced. It is stated to be situated in the forest-covered mountain behind the town of Roseau, 2,500 feet above the sea, and to be two miles in circumference. The margin of the lake consists of beds of sulphur, and its overflow finds exit by a waterfall of great height.

AT Monday's meeting of the Geographical Society, a paper by Mr. John Forrest was read, on his journey across the centre of Western Australia, referred to in *NATURE*, vol. xi. p. 93. Mr. Forrest is expected to arrive in England in the beginning of next month.

THE death is announced of the Rev. Charles New, the African missionary, who has made several additions to our knowledge of South Africa, and who is known specially for his ascent of the mountain Kilimanjaro. At the meeting of the Geographical Society on Monday, a paper by Mr. New was read, "On the Overland Route from the Pangani to Mombassa." Mr. New died from dysentery soon after this journey.

THE following lectures in Natural Sciences will be given at Trinity, St. John's, Christ's, and Sidney Sussex Colleges, Cambridge, during Lent Term, 1875.—On Electricity and Magnetism (continued), by Mr. Trotter, Trinity College, commencing April

15. On Electricity and Magnetism (continued), and on Heat, by Mr. Trotter, Trinity College, commencing April 14. On Chemistry (continuation of the course begun in the Lent Term), by Mr. Main, St. John's College, commencing April 13. Instruction in Practical Chemistry will also be given. On Palæontology (the Mollusca), by Mr. Bonney, St. John's College, commencing April 15. On Geology, by Mr. Bonney, St. John's College, commencing April 14. There will be excursions every Saturday, beginning April 17. Elementary Geology, commencing April 15. On Botany, by Mr. Hicks, Sidney College, beginning April 17. The Lectures this Term will be on Vegetable Physiology, and on Cryptogams. On Elementary Biology: a Practical Course at the Physiological Laboratory by the Trinity Prælector in Physiology (Dr. M. Foster), beginning April 15. On Animal Histology, by Mr. Martin, Christ's College.

At St. John's College, Cambridge, J. E. Marr, from Lancaster Grammar School, has been elected to an Exhibition for Natural Science, of 50*l.* per annum, tenable for three years. C. Slater, from Clifton College, has also been elected to one of 33*l.* 6*s.* 8*d.*, tenable for the same time.

A CORRESPONDENT informs us of an interesting discovery in the Rhætic beds at Westbury-on-Severn. A party of students from Gloucester, in examining the Cardium shales, found a few specimens of a starfish, which Dr. Wright of Cheltenham, to whom specimens were forwarded, has pronounced to be his *Ophioplepis Damesii*, first found in the Rhætic beds at Hildesheim, and described by Dr. Wright in the *Zeitschrift der Deutschen geologischen Gesellschaft*, Jahrgang 1874. The specimens do not quite correspond with the plate (xx'x.) of the Transactions alluded to, though the plate scarcely answers Dr. Wright's description.

AMONG the various kinds of fish which might with advantage be introduced into this country from America, perhaps none offer such good results as the Shad (*Alosa sapidissima* and *A. pseudo-harengus*). These American Shad are very much superior to any European species; and one of their chief merits is in the enormous shoals in which they enter the rivers. Some idea of this may be gathered from the fact that 5,000,000 pounds of the Shad and the closely allied "Alewife" were inspected as food for the market of Washington alone during the months of May, June, and July, 1874. No greater boon could be conferred upon Great Britain than the transfer of these two species of fish into its waters. An attempt has been made to transport this fish into Germany, but failed, owing to the length of time involved in the voyage. Very little difficulty is anticipated in such an experiment in regard to this country; the young fish could, in the opinion of American fish culturists, be easily brought over.

IN connection with the recent meeting of the French learned societies, Mr. G. J. Symons writes from Paris as follows:—"M. Michel threw out a suggestion which appears to me likely to, or at any rate possibly may, be the means of averting the principal source of danger in crossing the Atlantic. I refer, of course, to icebergs in foggy weather and the total wrecks which occur from running on to them. It is well known that the proximity of icebergs is indicated by a diminution in the temperature of the sea. M. Michel's proposal is very simple: it is merely that Transatlantic steamers should carry a submerged electric thermometer, which might easily be arranged to ring a bell in any part of the vessel on the occurrence of whatever change of temperature might be decided upon."

A RECENT letter in the *Times* states that a cross halo was seen on the night of the 14th March. On the same night at sunset a halo was observed by M. de Fonvielle, and described by him in his daily meteorological article in the *Paris Temps*. It was a circular halo, no trace of the cross being seen. It does not

appear that the phenomena were produced by the same cloud, as the clouds were drifting southwards. But halos were very frequent about that time. On the 12th a solar halo was seen by M. de Fonvielle, and noted in *NATURE*, vol. xi. p. 395. The same cirrus may present, when seen from different altitudes, different appearances; this is proved by the variations of aspect observed by M. Tissandier in his last ascent.

At the *conversazione* of the Quekett Club to be held at University College to-morrow night, Mr. J. F. Tafe will exhibit some specimens of the Colorado Potato Beetle.

THE large refractor (fourteen inches) of the Paris Observatory, which was damaged during the Communal disturbances, is now being restored. The roof, which had been perforated by hundreds of balls, will be put in working order. This refractor will be exclusively devoted to celestial photography.

THE publishers of the "Instructions for the Observation of Phenological Phenomena," referred to in a recent number (p. 408), are Williams and Strahan, Lawrence Lane, Cheapside. We believe that forms for recording observations may be obtained by application to the Secretary of the Meteorological Society.

The Colonies is the title of a fortnightly journal published by Silver and Co., which gives the cream of the news from the colonial possessions of Great Britain. Each issue contains one or more papers of a scientific nature on subjects connected with the colonies. The subjects are well selected, and the information is generally accurate and valuable. The number for April 3 contains two interesting papers; one on the races of man inhabiting New Guinea; and the other on the Lac insect and its commercial products (illustrated).

THE *Natal Colonist* for Feb. 26 contains an interesting paper on "The Bee-tailor and the Crane or Windlass Spider: Instinct or Reason?" The *Natal Colonist* deserves to be commended for the interest it has always shown in scientific matters; it has ever been ready to open its columns to contributions on subjects of scientific interest. In a note prefixed to the paper the editor states that he wishes to enlist the "sympathies and the aid of those readers who are observers and students in the various branches of Natural History," so as to follow up the paper referred to with a succession of similar records of observations. We hope the invitation will meet with a response from many quarters. To quote the words of the preliminary note, "We feel assured that there are many throughout the colony whose observations of the habits of animals, of the characteristic products of their own localities, whether animal or vegetable, and the like, would be of great interest to others, and possibly very materially conduce to the advancement of science, and we should be glad indeed to make our journal the vehicle of communicating such records to the public." The Town Council of Durban, we are glad to see, contemplate setting apart a portion of the new buildings for the purposes of a museum.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*) from West Africa, presented by Mrs. Lange; a Vervet Monkey (*Cercopithecus lalandii*) from West Africa, presented by Miss Emily Sisson; a Golden Eagle (*Aquila chrysaetus*) from Spain, presented by Mr. J. Arthur Wright; two Leadbeaters Cockatoos (*Cacatua leadbeateri*) from Australia, presented by Mr. G. L. Prendergast; two Shoveller Ducks (*Spatula clypeata*), European; a Blue-faced Green Amazon (*Chrysotis bouqueti*) from St. Lucia, West Indies, purchased; an Ocelot (*Felis pardalis*) from South America; a Porto Rico Pigeon (*Columba corensis*) from St. Vincent, purchased.